

ORIGINAL

BEFORE THE  
**Federal Communications Commission**

WASHINGTON, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

In the Matter of )

Amendments of Parts 22, 90 and 94 )  
 of the Commission's Rules to Permit )  
 Routine Use of Signal Boosters )

WT Docket No. 95-70  
 RM-8200

To: The Commission

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PETITION FOR RECONSIDERATION

TX RX Systems, Inc. ("TX RX"), pursuant to  
 Section 1.429(d) of the Rules and Regulations of the Federal  
 Communications Commission ("Commission"), by its attorneys,  
 hereby respectfully submits this Petition for  
 Reconsideration in the above-styled proceeding.<sup>1/</sup>

I. PRELIMINARY STATEMENT

1. TX RX designs and manufactures radio signal  
 boosters, amplifiers, and related equipment, including  
 filters, multicouplers and combiners. TX RX filed the  
 Petition for Rule Making that led to this proceeding and  
 submitted its Comments and Reply Comments in this matter on  
 August 14, 1995 and September 1, 1995, respectively.

<sup>1/</sup> Report and Order, 61 Fed. Reg. 31051 (June 19, 1996)  
 [hereinafter "Order"].

Customers of TX RX use radio signal boosters to fill in dead spots in their coverage area for private land mobile dispatch, private and common carrier paging, and multiple address systems (MASS). Dead spots are often found in areas such as tunnels, underground parking facilities, on cargo ships, and in aircraft hangars. A signal booster does not extend the geographic coverage area of the radio system. Rather, it enables the signal to reach parts of the coverage area that are otherwise blocked by natural terrain or man-made structures. Particular safety applications include use of signal boosters for communications inside nuclear power plants, in public transportation systems such as subways, and in manufacturing plants such as automobile assembly plants. Signal boosters can be particularly helpful to fire departments if fire fighters are expected to enter large multi-story buildings or one with several subterranean levels.

2. Dead spots in coverage are persistent problems for the point-to-multipoint or omnidirectional signals transmitted by both operational-fixed and mobile radio systems. An even greater problem is portable "talk-out" from the inside of a building or other structure to the outside. Advancements in signal booster technology, and in overall communications capabilities, have reached a point

where system engineers and users expect complete radio signal coverage in their authorized areas.

3. The Commission determined in this matter to amend its rules to expand the use of signal boosters under Parts 22 and 90 and allow signal booster deployment under Part 94 for MAS operations. The Commission further determined to allow the use of Class A narrowband boosters in both open and confined environments and the use of Class B broadband boosters only in areas that are confined or enclosed such as tunnels, underground parking garages, and within buildings. TX RX is deeply concerned with the consequences of one element of the rule amendments adopted by the Commission. In view of this concern, TX RX is compelled to submit this Petition for Reconsideration.

## **II. PETITION FOR RECONSIDERATION**

4. TX RX supports the expanded and unrestricted use of signal boosters that comply with the Commission's spurious emission and occupied bandwidth standards, and which do not cause interference to any other authorized stations or systems. This position is based, in large part, on the premise that both Class A and Class B signal boosters have been used by existing licensees, within the constraints

of their respective system authorizations, with few known cases of interference. Further, in those few cases of reported interference, the problem has been readily resolved by reducing amplifier gain. TX RX submits that the benefits of signal boosters have been demonstrated by these early users of this technology.

5. TX RX agrees with the Commission that the use of signal boosters enables licensees to improve the coverage and reliability of their systems. However, TX RX is concerned that the limitation placed on the use of Class B signal boosters is burdensome to those who may currently be using them in a manner inconsistent with the amended rules, and to those who have expressed interest in using them in the future.

6. Irrespective of the class of signal booster employed, or the environment in which it is installed, licensees are not permitted to cause interference to any other authorized stations or systems and are required to correct any instances of interference. The fact that Class B signal boosters may retransmit other licensees' signals does not eliminate this requirement. Nor is the non-interference requirement eliminated for Class A boosters

which might retransmit its own signals outside of its authorized service area.

7. The amended rules, as adopted in the Order, do not stipulate the physical placement of radiating elements of Class B signal boosters used within confined environments. Conceivably, a signal booster antenna could be placed "just inside" a confined area and, yet, emit significant RF energy outside of that area. Notwithstanding this placement, such use is still permitted provided the signal booster does not cause interference to other stations or systems.

8. In permitting the use of signal boosters (called cellular repeaters for cellular service) under Part 22 of the Rules and Regulations, the Commission does not differentiate between Class A and Class B boosters. See Section 22.907(k). It should also be noted that the Order does not mention signal boosters by class in its amendment of Part 22 of the rules. See Section 22.527. Moreover, the efficient implementation of cellular repeaters mandates that Class B boosters be employed; otherwise, a separate Class A booster would be required for each cellular channel. Additionally, with frequency reuse being based on geographical separation, the frequency plan of a cellular system is not substantially different from that of other

wireless providers, including SMRs. This being the case, the potential for cellular repeaters to cause inter-cell interference, within a cellular system, is similar to the interference potential for non-cellular services.

9. The rule provision that defines areas where Class B broadband boosters may be used under Part 90 is ambiguous and, TX RX submits, requires modification. According to the Order, the use of Class B boosters is permitted not only in confined areas, but also in remote areas, i.e., areas where there is little or no risk of interference to other users. See Section 90.219(d). It is unclear as to what constitutes a remote area, or how the risk of interference is determined. One licensee may define a remote area as a location with poor access, while another may define it as a location away from dense populations. In terms of interference risk, 5% or less might be considered "little" by some users, but not others. In any event, even if a signal booster is installed in a location that is virtually isolated and the risk of interference is essentially zero, licensees still must correct any interference caused by the booster.

10. A principal benefit of Class B signal boosters is their flexibility for use in temporary and/or emergency

situations. For example, a fire or police department may be licensed on several different frequencies within a given band. In order to ensure complete and reliable coverage of itinerant locations by using Class A signal boosters, a separate booster for each frequency and location would be required. However, if Class B signal boosters are permitted, a single booster covering all of the licensed frequencies could be employed. This flexibility will permit fire and police departments to provide temporary or emergency coverage without the need to have several different Class A boosters available.

11. Class B signal boosters installed prior to the adoption of these amendments have been providing reliable coverage of previous dead spots with few known cases of interference. Further, end users of these systems have grown accustomed to the improved reliability available with the use of signal boosters. Requiring Class B signal boosters currently operated in open environments to be replaced with Class A signal boosters would serve no useful purpose and would only increase the cost of service for existing users, many of whom it is understood are public safety agencies.

### III. CONCLUSION

12. The potential exists for conventional base stations, with known and coordinated system parameters, to cause interference to other authorized stations or systems. Because of this potential, licensees are required to operate their systems within the constraints of their licenses. This same requirement should be sufficient to ensure that users of signal boosters do not cause interference to other authorized systems.

13. Restricting the use of Class B broadband boosters to confined environments reduces the flexibility of licensees to improve system coverage and reliability, unnecessarily increasing system costs, without appreciably decreasing the potential for interference. It is respectfully submitted that this restriction on the use of Class B signal boosters serves no useful purpose and, potentially, increases the regulatory burden of the Commission.

**WHEREFORE, THE PREMISES CONSIDERED,** TX RX respectfully requests the Federal Communications Commission to grant the Petition for Reconsideration by eliminating from



Section 90.219(d) any restriction on the use of Class B  
signal boosters.

Respectfully submitted,

**TX RX SYSTEMS, INC.**

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